Monitoring our Changing Environments for Use in Environmental Health Decision Making

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Issue: Urgent global challenges require a better understanding of environmental change processes at all scales, from local to global. An example is the global movement of air pollution.

Response: The Global Earth Observation System of Systems (GEOSS) is being developed to:

- meet global challenges by working with and building upon existing national, regional, and international systems to provide comprehensive, coordinated, and sustained Earth observations,
- improve monitoring of the state of the Earth, increase understanding of Earth processes, enhance prediction of the behavior of the Earth system, and transform the data collected into vital information.

Outcome: Access to information integrated into new data products to help decision-makers make more informed decisions to benefit the environment, societies, and economies worldwide.

GEOSS Architecture: Data to Decision and Outcomes

Earth Observation Data
(raw data and facts)
Remotely-sensed, Airborne, and *In-situ*
satellites - weather stations - ocean buoys - surface & airborne instruments

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Information Development
(processed data)
Earth System Models
Biosphere (oceans - ice - land - atmosphere - solid Earth)

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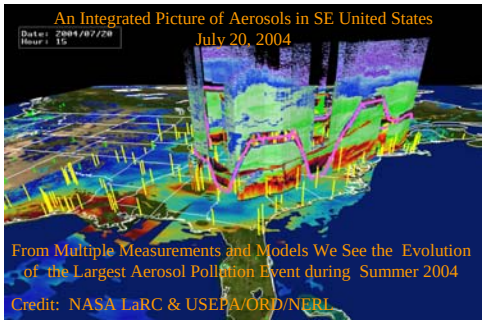

Knowledge
(contextual and actionable information)
Predictions and Observations
high performance computing - visualization - communication - standards - interoperability

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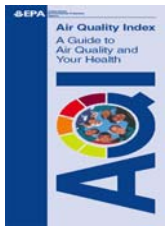
Decision Support
assessments - systems



AIRNow is an EPA program that includes collaboration with NOAA, NASA, NPS, news media, tribal, state, and local agencies working together to report conditions for ozone and particle pollution. (www.airnow.gov)

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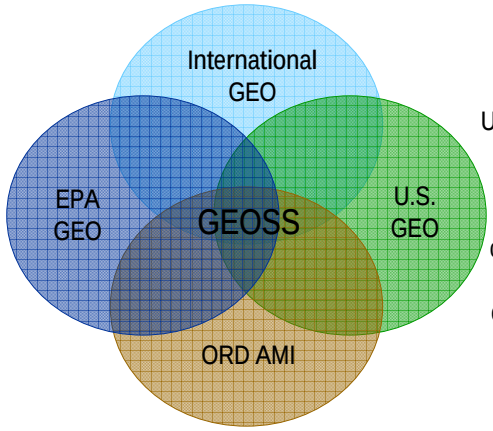
Decisions
policy – management – personal

GEOSS Program Integration

Group on Earth Observations
International partnership taking the pulse of the planet

EPA GEOSS Coordination Committee
Collaborating with other partners to make Earth observation data more informative



U.S. Group on Earth Observations
Developing an integrated comprehensive and sustained Earth observation system

ORD's Advanced Monitoring Initiative
Improving EPA's environmental health decision making

ORD AMI, working collaboratively with EPA GEO to support GEOSS, is currently funding 17 pilot projects to demonstrate the interoperability of the various independent data sets and their ability to be linked, thereby creating a "system of systems", to support decision making. These projects are described in more detail in other Science Forum posters: *Air, Water, Ecosystem Quality Monitoring and Forecasting: Combining Forces for Better Results*; *Monitoring Air Pollution Transport*; and *Using Data Mining and Historical Data Conversion Techniques to Support Environmental Health Decision Making*.

epascienceforum 2006
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